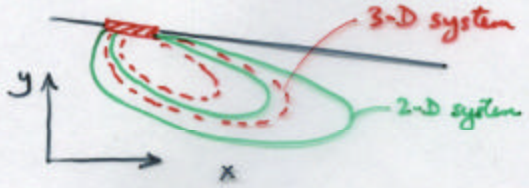
5.7 EVALUATING DISPERSIVITY

Note: transverse dispersion will affect the resulting form of the plume due to lateral attenuation



— No lateral dispersion (2-D)

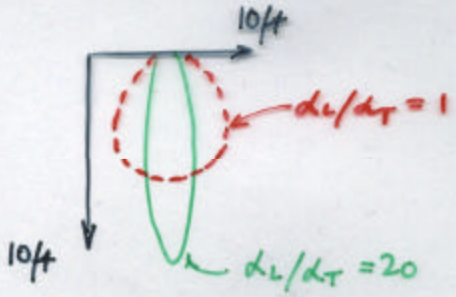
--- Lateral dispersion (3-D)

This is important if:

3-D systems are represented as 2-D

2-D systems are represented as 1-D

Have to incorporate these effects when they are important.



- Large ratio gives greater linear propagation length
- Small ratio gives lateral attenuat

Methods:

- Laboratory
- Field
  - Induced gradient
  - Natural gradient - { Contaminated sites. Tests will remobilize contaminants.

GEOMETRY

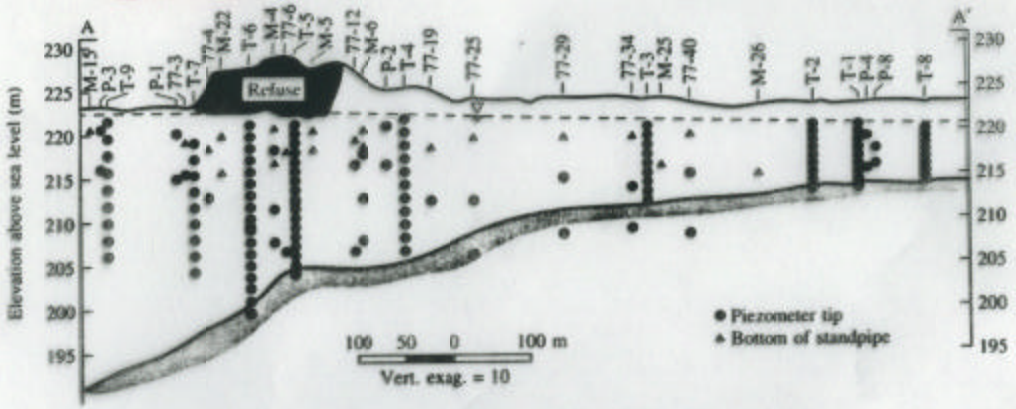


FIGURE 2.33 Cross section of aquifer at the Borden landfill showing the location of multilevel monitoring devices. Source: E. O. Frind and G. E. Hokkanen, *Water Resources Research* 23, no. 5 (1987):918–30. Copyright by the American Geophysical Union.

CHLORIDE PLUME

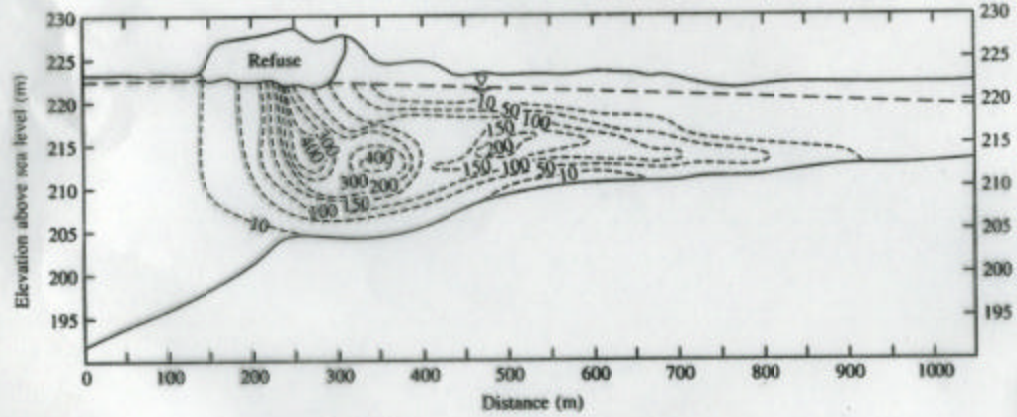
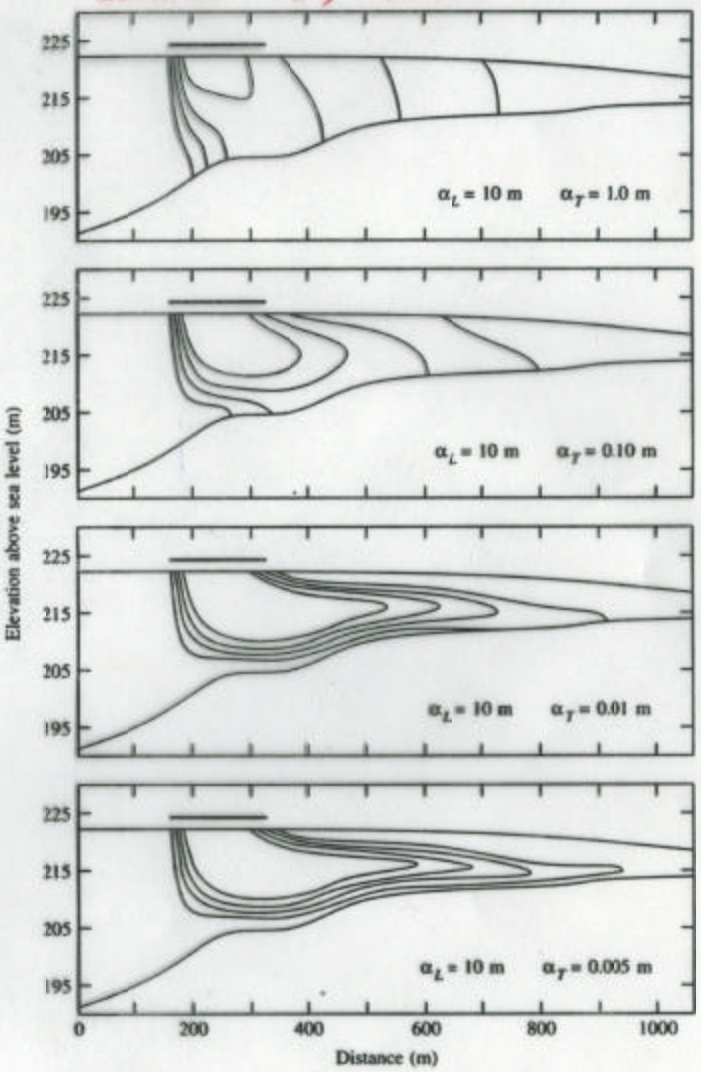


FIGURE 2.34 Chloride plume along the Borden landfill cross section in 1979. Values are in milligrams per liter. Source: E. O. Frind and G. E. Hokkanen, *Water Resources Research* 23, no. 5 (1987):918–30. Copyright by the American Geophysical Union.

CONSTANT α_L ; VARIABLE α_T



Reducing α_T enables longer propagation since less lateral loss ⊥ to profile